measured during the last 8 beats of the detected tachycardia episode (TE). A total of 169 TE was obtained from 17 of 44 P (39%). The EGM width was programmed using an individually adapted width threshold interval of 88 ± 12 ms to distinguish between SVT and VT prior to discharge. To determine the duration of the intracardiac EGM, a mean slew rate of 37 ± 6 mV/s was employed. The criterion for VT was met when 6 out of 8 detected QRS complexes of the tachycardia episode exceeded the programmed width interval. During initial follow-up, the width criterion resulted in appropriate VT detection in 5 of 9 P with spontaneous VT and in inappropriate VT detection in 3 of 6 P with SVT and had to be reprogrammed. The results for all episodes are presented in the following table.

Clinical arrhythmia	Wide EGM width ≥ 6 of 8 complexes	Narrow EGM width ≥ 3 of 8 complexes
Induced VT (n = 15)	93%	7%
Spontaneous VT (n = 112)	96%	4%
Spontaneous SVT (n = 42)	24%	76%

Conclusion: Measurement of intracardiac EGM width during tachycardia may improve appropriate arrhythmia discrimination. However, this parameter apparently is not stable in all patients requiring individual adaptation during follow-up.

912-70 The Effect of Simulated Pacing Stimuli on Ventricular Fibrillation Detection by Implantable Defibrillators

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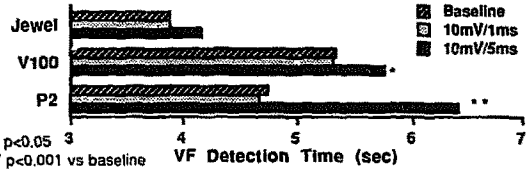
The effect of pacemaker (PM) stimuli on ventricular fibrillation (VF) detection by defibrillators (ICD) has not been formally evaluated. Detection times in 34 VF signals recorded from rate sensing leads in 11 pts were compared before and after the addition of superimposed simulated PM artifact (60 ppm) in three ICD systems: Medtronic Jewel, Ventritex V-100, and CPI P2. The VF signals were acquired using a wide bandpass filter amplifier (HVSO2), recorded on analog tape, and subsequently digitized at 5 kHz. Electronically generated "pacer" square wave impulses with an amplitude of 10 mV and pulse width (PW) of 1 and 5 ms were added to the baseline VF to synthesize composite PM-VF signals. Each ICD was programmed with nominal parameters as a single zone system with VF detection at 350 ms. Baseline VF and PM-VF signals were restored to original gain before input to each ICD. VF detection times are shown:



* p<0.05
** p<0.001 vs baseline

Non-detection was defined as ≥ 10 sec. All baseline VF and PM-VF signals with PW = 1 were detected. Of the PM-VF signals with PW = 5, non-detection occurred in the Jewel 1/34 (2.9%), V-100 1/34 (2.9%), and P2 10/34 (29.4%) ($p < 0.01$).

Conclusion: Inhibition of device sensing by pacer artifact during induced VF in third generation ICD's appears to be infrequent when a relatively narrow pulse width is utilized. Pacing pulse width is an important determinant of pacemaker-ICD interaction.

912-71 Effect of Electrode Polarity on Monophasic Waveforms Using an Endocardial Lead System in Pigs

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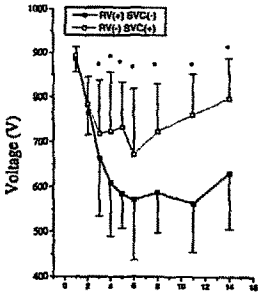
Electrode polarity reversal results in improved defibrillation efficacy in some patients and no change in others for monophasic waveforms in which duration varies with the impedance. This suggests waveform duration may contribute to the observed difference. To test this idea, defibrillation thresholds (DFTs) were determined for monophasic exponential waveforms (150 μF) truncated at 1, 2, 3, 4, 5, 6, 8, 11, 14 ms. Strength-duration curves were constructed for both polarities. In eight pigs, two platinum spring electrodes were placed in the RV apex and at the RA-SVC junction. Paired t-test and ANOVA analyses were used to determine the effect of polarity and waveform duration on DFTs. There was no significantly difference in DFT leading edge voltage for 1 and 2 ms monophasic waveforms when the RV electrode was either anode or cathode. However, when waveform duration was 3 ms or longer, waveforms with RV cathode yielded significantly higher DFT voltage requirements than that with RV anode ($p < 0.01$) and the difference in DFTs between each polarity was significantly increased as waveform duration increased.



Conclusion: Transvenous electrode polarity significantly affects DFT for monophasic waveforms greater than 3 ms in duration. Monophasic waveform duration affects the polarity difference in DFTs and may partially explain why some patients exhibit a larger effect than others.

912-72 Ventricular Tachyarrhythmias Occur More Frequently in Winter and Less Frequently in Spring Than in Other Seasons: Report From a Multicenter Implantable Cardioverter Defibrillator (ICD) Database

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To assess monthly and seasonal variations in spontaneous ventricular tachyarrhythmias(VTA), we reviewed the prospectively collected database for a tiered therapy investigational ICD. The study included 282 (241 male, 41 female) U.S. Pts. This device labels the date and time of all VTA's. Of the 1995 episodes noted in the 194 Pts. who had VTA (cycle length = 327 ± 95 ms) a median of 54 days after implant, the most (615 = 31%) occurred in winter (W) and the least in the spring (SP) (325 = 16%), with intermediate results in autumn (A) (560 = 28%) and summer (SU) (495 = 25%) ($p = 0.0001$ by Poisson regression analysis). These results were not influenced by implant date, use of antiarrhythmic agents, presenting arrhythmia, type of VTA (ventricular tachycardia or fibrillation), climactic differences of implanting sites ("warm winter" site vs "cold winter" site), or the presence of coronary artery disease. Seasonal patterns in females were similar to those in males, although they had more frequent VTA in SU than males (89 episodes = 36.3% vs. 406 episodes = 23.2%). Similarly, the greatest number of VTA/active Pt/month occurred in January (67.5) and March (77.9) and the smallest was in April (40.7, $p < 0.001$). We conclude that Pts with ICD's have marked seasonal variation in the occurrence of VTA's, with the highest frequency in the W and the lowest in SP. The explanation for this observation remains undetermined.

912-73 Efficacy of the First Countershock in Prolonged Ventricular Fibrillation

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Ventricular fibrillation (VF) is usually terminated by a single countershock, if delivered immediately after onset of VF. However, little is known about factors determining efficiency of the first countershock in prolonged VF. Automated defibrillators as used by EMTs during out-of-hospital resuscitations continuously record the patient's rhythm on audio tapes. This allows an analysis of arrhythmia present immediately before and after the first 200-J shock, offering an opportunity to investigate the efficacy of defibrillation in prolonged VF. *Results:* Tape recordings of resuscitation attempts in 284 consecutive pts (age 76 ± 13 years, 31% female) with VF as underlying arrhythmia were reviewed. After the first shock, 131 pts (46%) had persisting VF, 80 (28%) converted into asystole (ASY), 74 (26%) into a regular electric activity (REA). This distribution was independent of age (≤ 65 vs > 65 years), sex, and underlying disease (primary VF vs myocardial infarction vs unclear). Neither call-scene- nor collapse-scene-intervals of ≤ 3 min, 4–5 min, 6–7 min, and > 7 min of the rescue squad had an influence on the effects of the first countershock. However of the 73 pts with REA after the first shock, 70% were admitted to a hospital, compared to only 48% of 80 pts with ASY and 40% of 131 pts with persisting VF ($p < 0.004$). Of the 47 pts surviving >